

# Experience from applying the standard or welcome to our “small” world

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# The Agenda for Today

1. Some basic concepts and their definitions
2. Front End view of 15288
3. The most important processes 😊
4. Summary

# Some Basic Concepts

- System
- System of Interest
- ~~Systems of Systems~~
- Systems Engineering
- The System Life Cycle and Decision Gates
- Systems Engineering Processes
- .....

# System

## System:

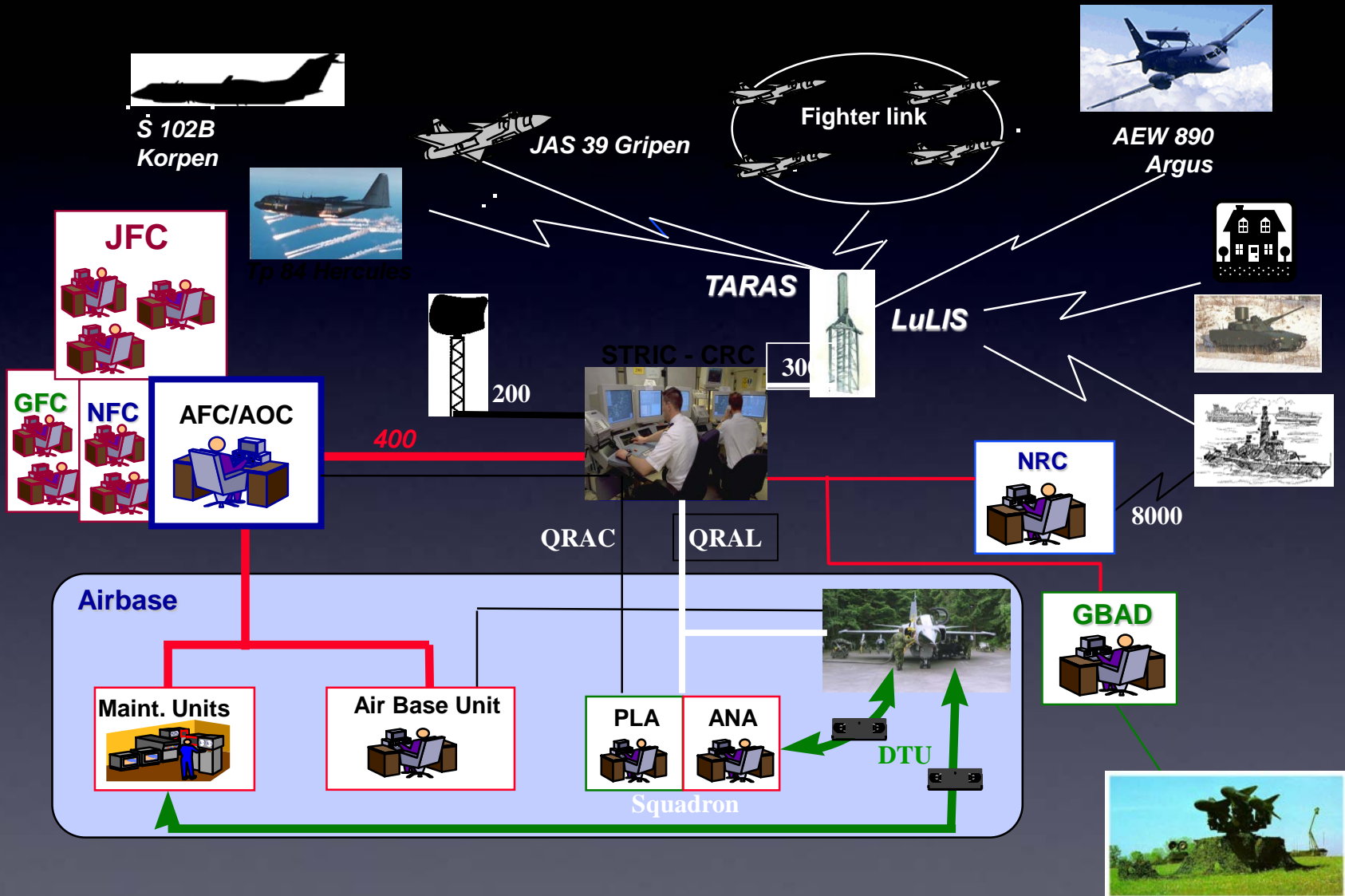
“A combination of interacting elements organized to achieve one or more stated purposes” (ISO/IEC 15288)

“Systems are man-made, created and utilized to provide services in defined environments for the benefit of users and other stakeholders. These systems may be configured with one or more of the following: **hardware, software, humans, processes, procedures, facilities, and naturally occurring entities.**”  
(ISO/IEC 15288)

# Example of a System



# Another Example: Air Force 2000

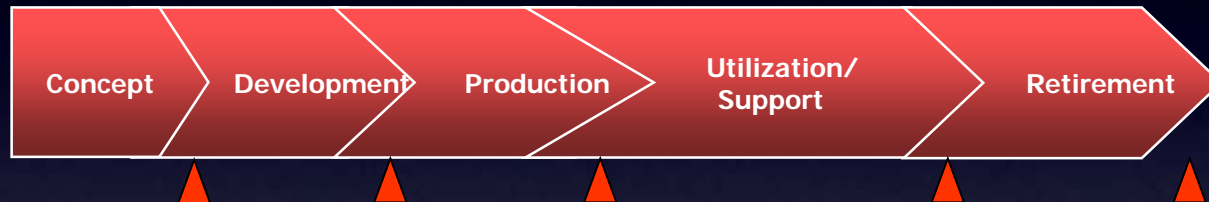


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# Systems Engineering

“Systems Engineering is an **interdisciplinary** approach and means to enable the realization of successful systems”. (INCOSE)

# The System Life Cycle



Why do we need the system life cycle?

- Control of system evolution!
- Explicit decisions at important life cycle stages!



# Systems Engineering Process

- "A set of interrelated or interacting activities which transforms inputs into outputs" (INCOSE Handbook v. 3.2)
- "The result (output) has to be of explicit value (for the customer, user,...)"

# ISO/IEC 15288 Systems Engineering Life Cycle Processes

## Enterprise Processes

Enterprise Environment Management

Investment Management

System Life Cycle Processes Management

Resource Management

Quality Management

## Agreement Processes

Acquisition

Supply

## Project Processes

Planning

Assessment

Control

Decision-making

Risk Management

Configuration Management

Information Management

## Technical Processes

Stakeholder Requirements Definition

Requirements Analysis

Architectural Design

Implementation

Integration

Verification

Transition

Validation

Operation

Maintenance

Disposal

# Systems Engineering Processes and the System Life Cycle, The Front End Way



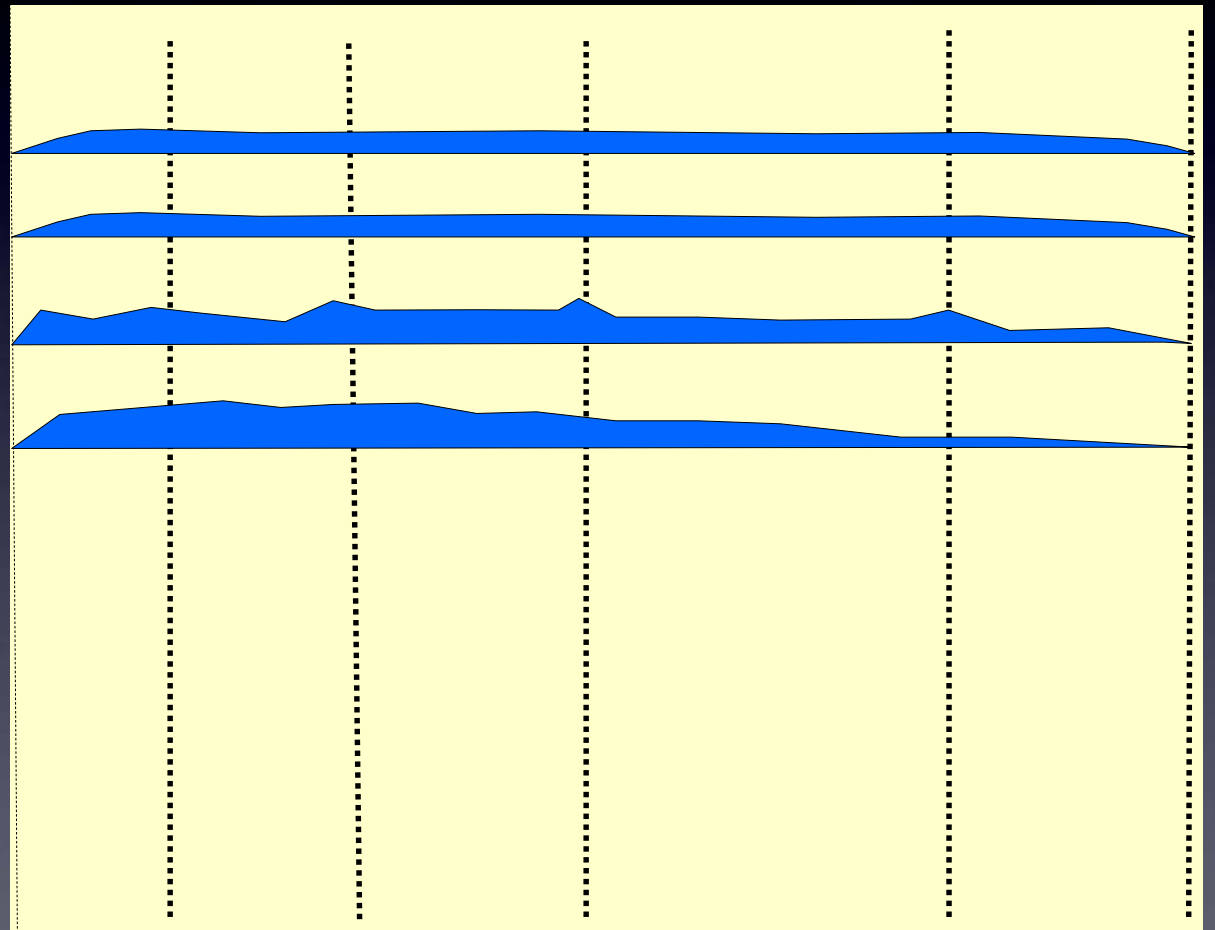
## Processes:

Enterprise Processes

Agreement Processes

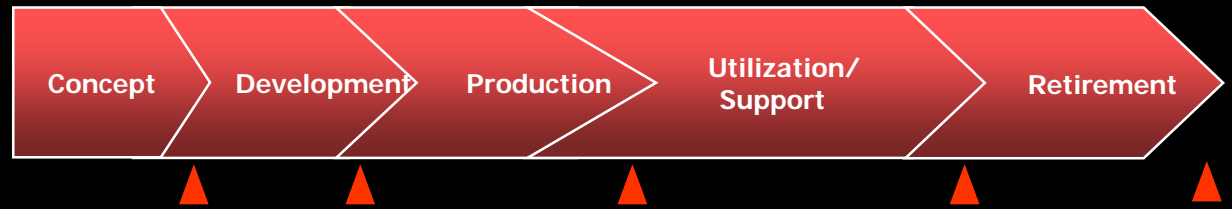
Project Processes

Technical Processes



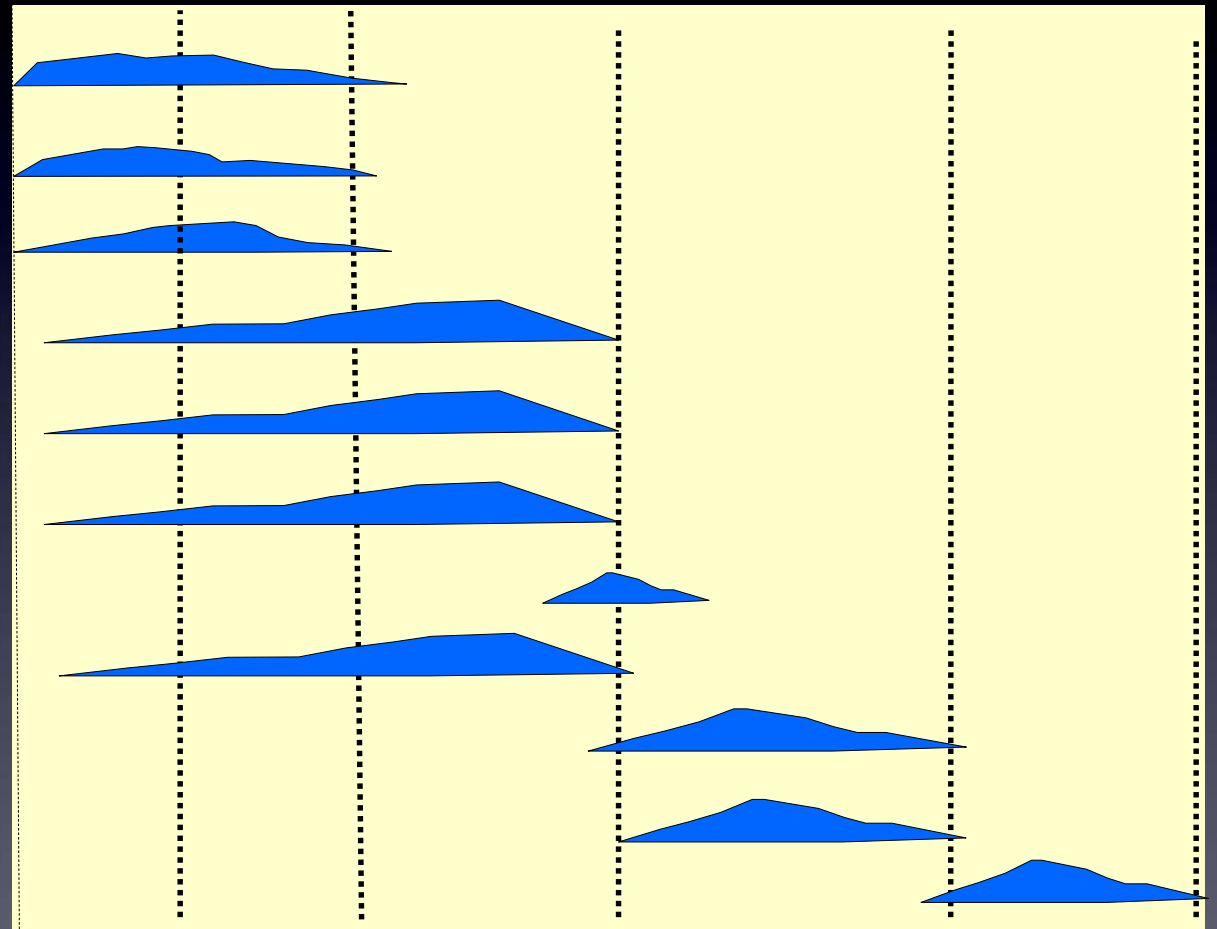
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# Technical Processes and the System Life Cycle



## Technical Processes:

- Stakeholder Requirements Definition Process
- Requirements Analysis Process
- Architectural Design Process
- Implementation Process
- Integration Process
- Verification Process
- Transition Process
- Validation Process
- Operation Process
- Maintenance Process
- Disposal Process

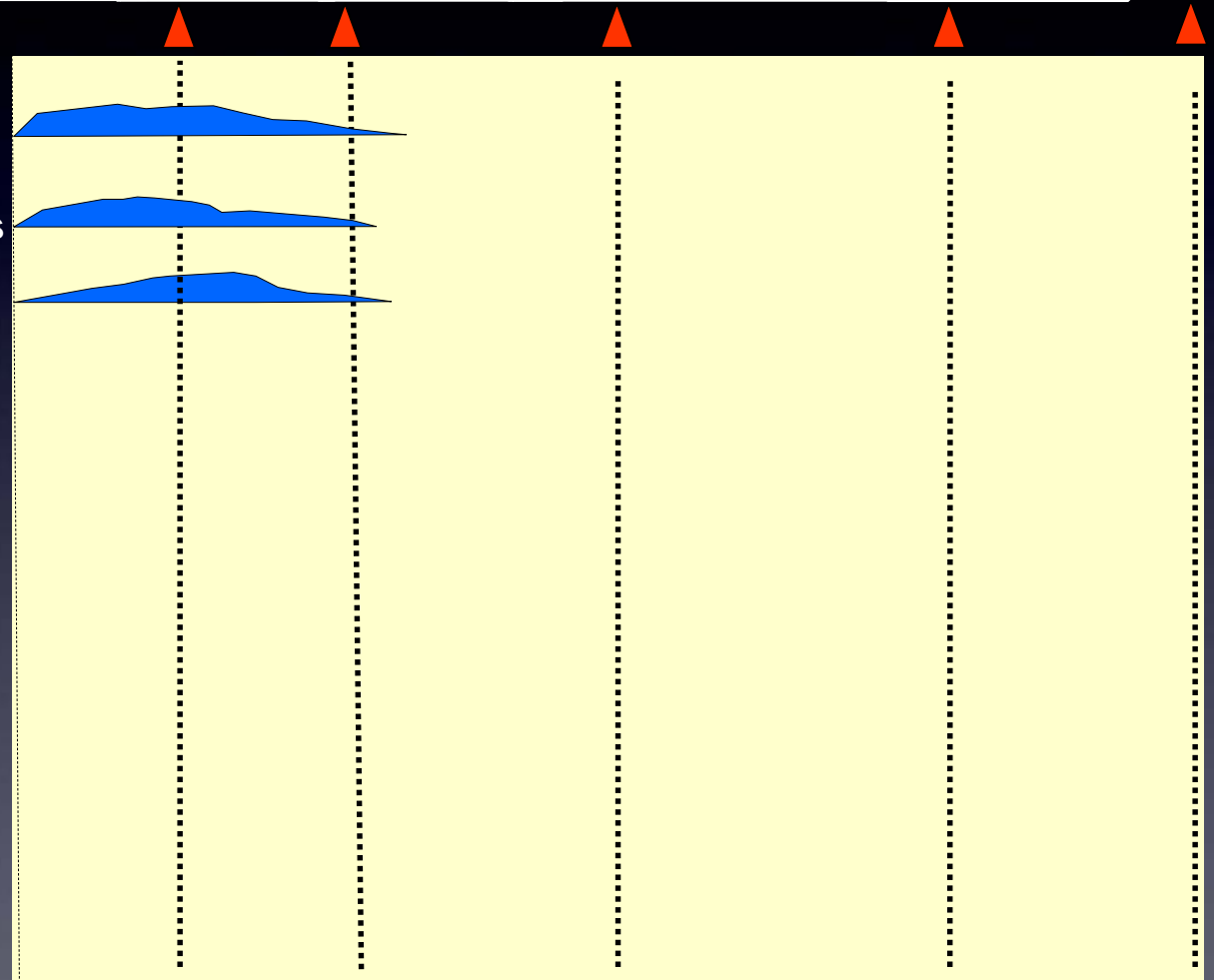


# Technical Processes and the System Life Cycle, The Front End Processes



## Technical Processes:

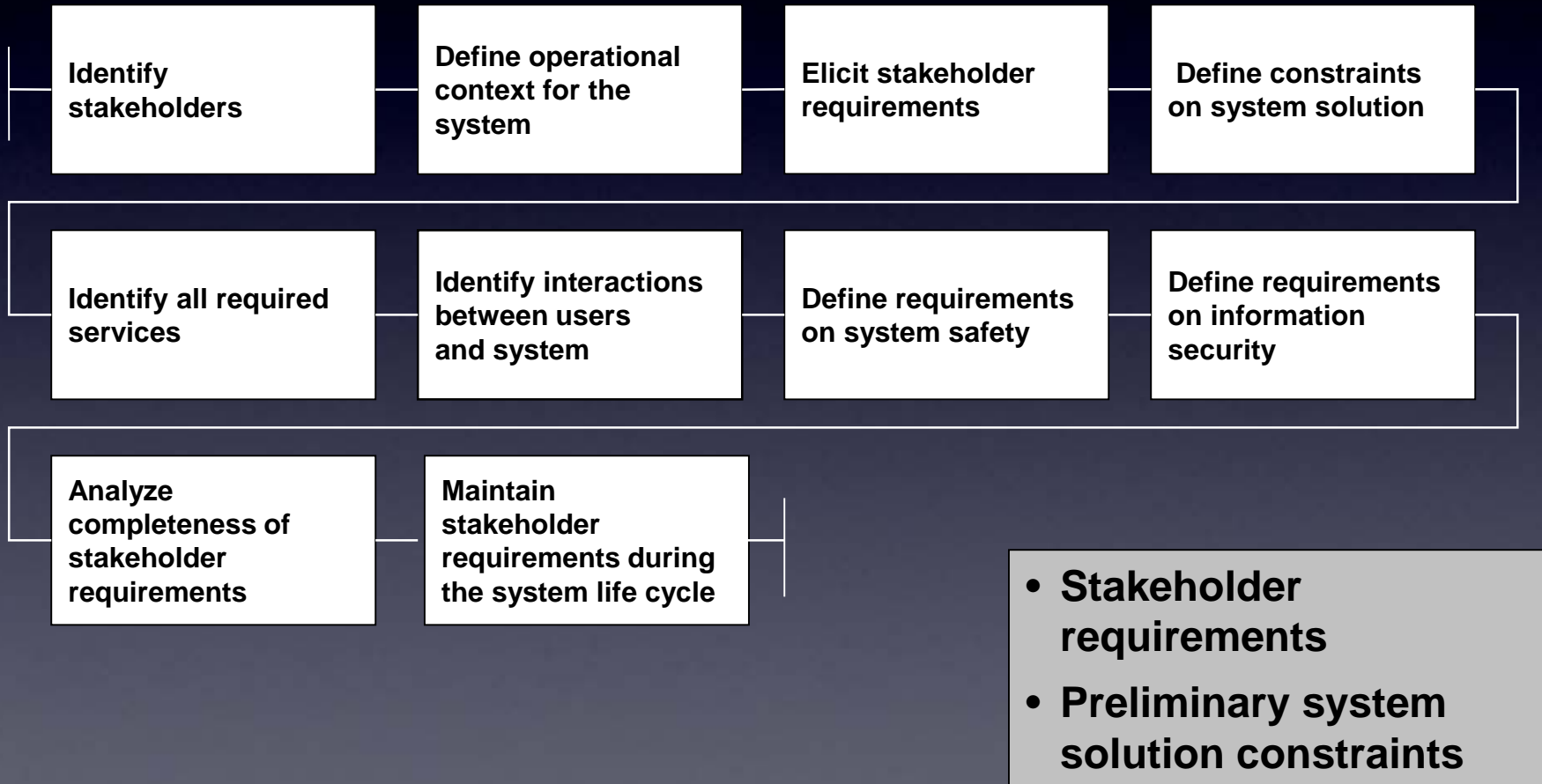
- Stakeholder Requirements Definition Process
- Requirements Analysis Process
- Architectural Design Process



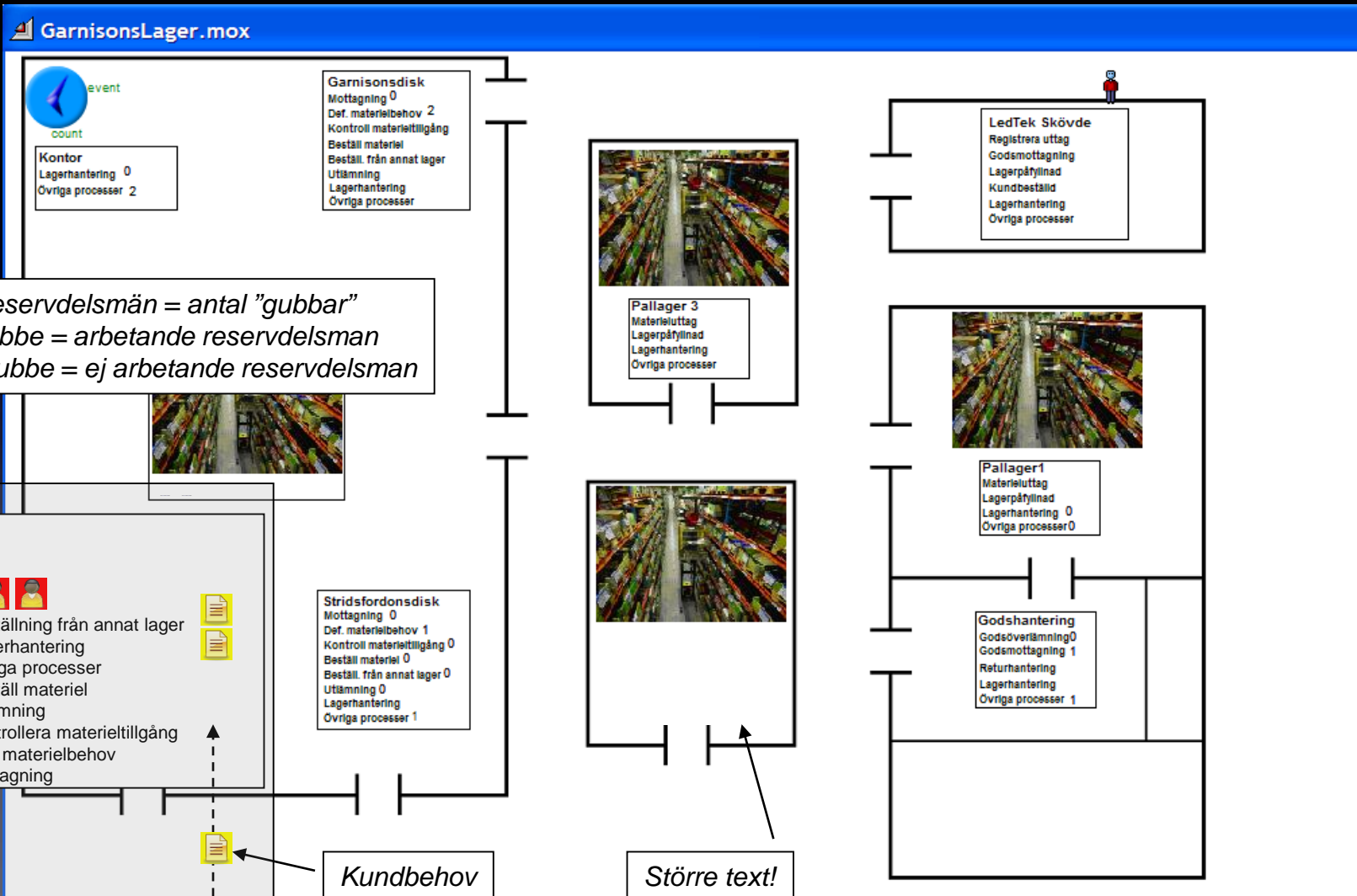
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# Process: Stakeholder requirements definition

- Need for systems engineering effort
- Overall requirements
- Stakeholder needs
- Project goals, constraints and agreements

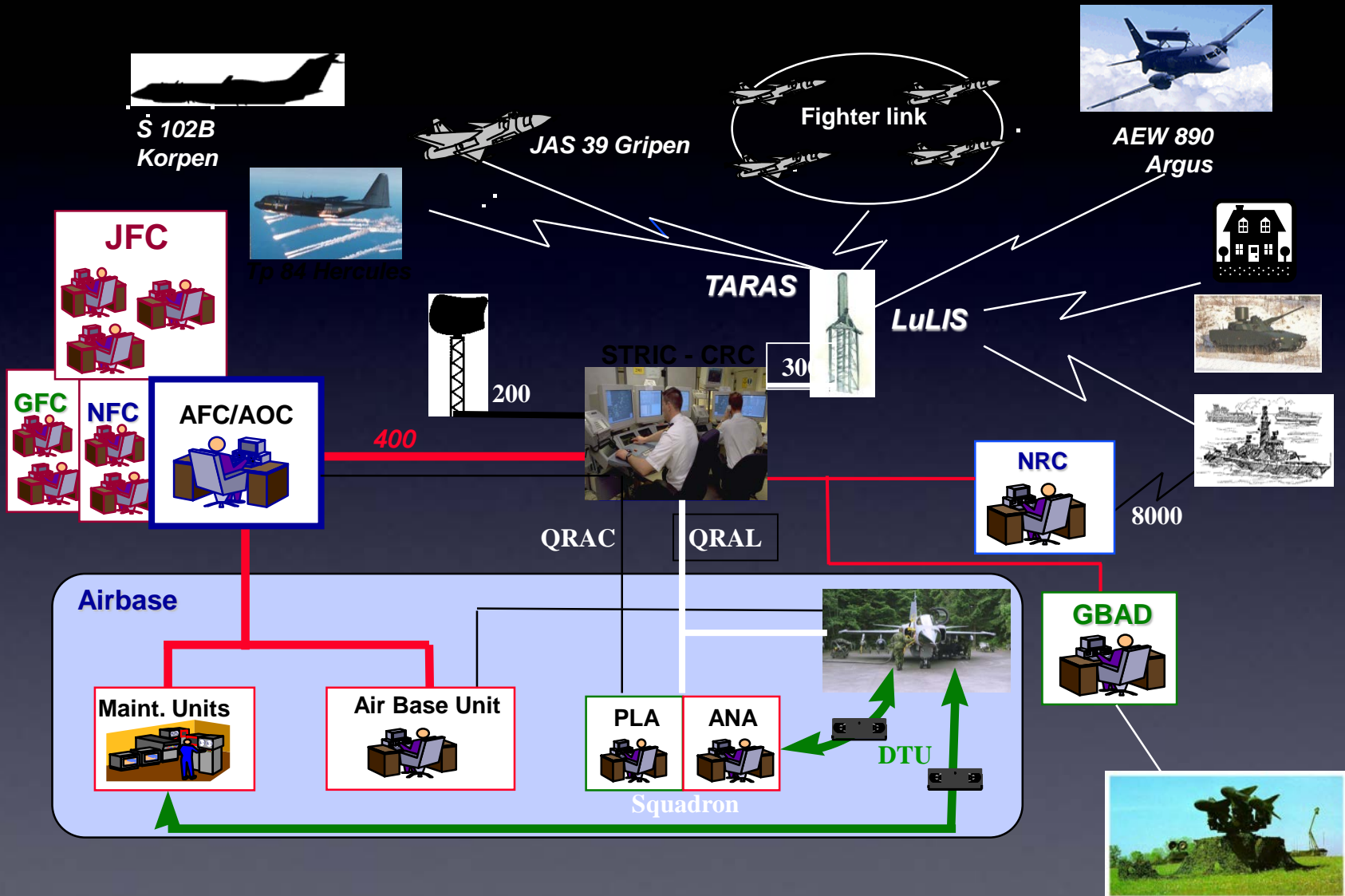


# Depot



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# Air Force 2000

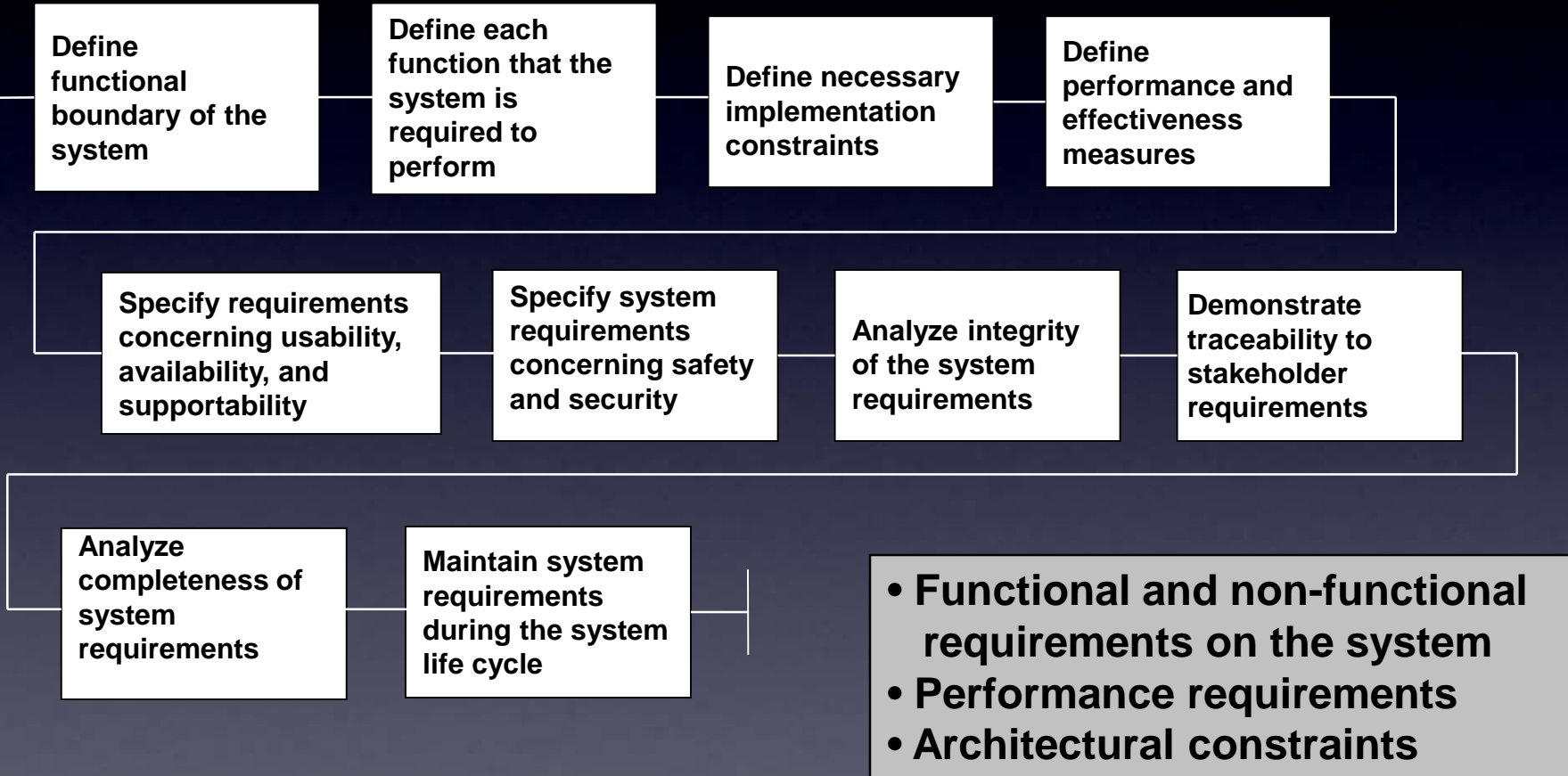


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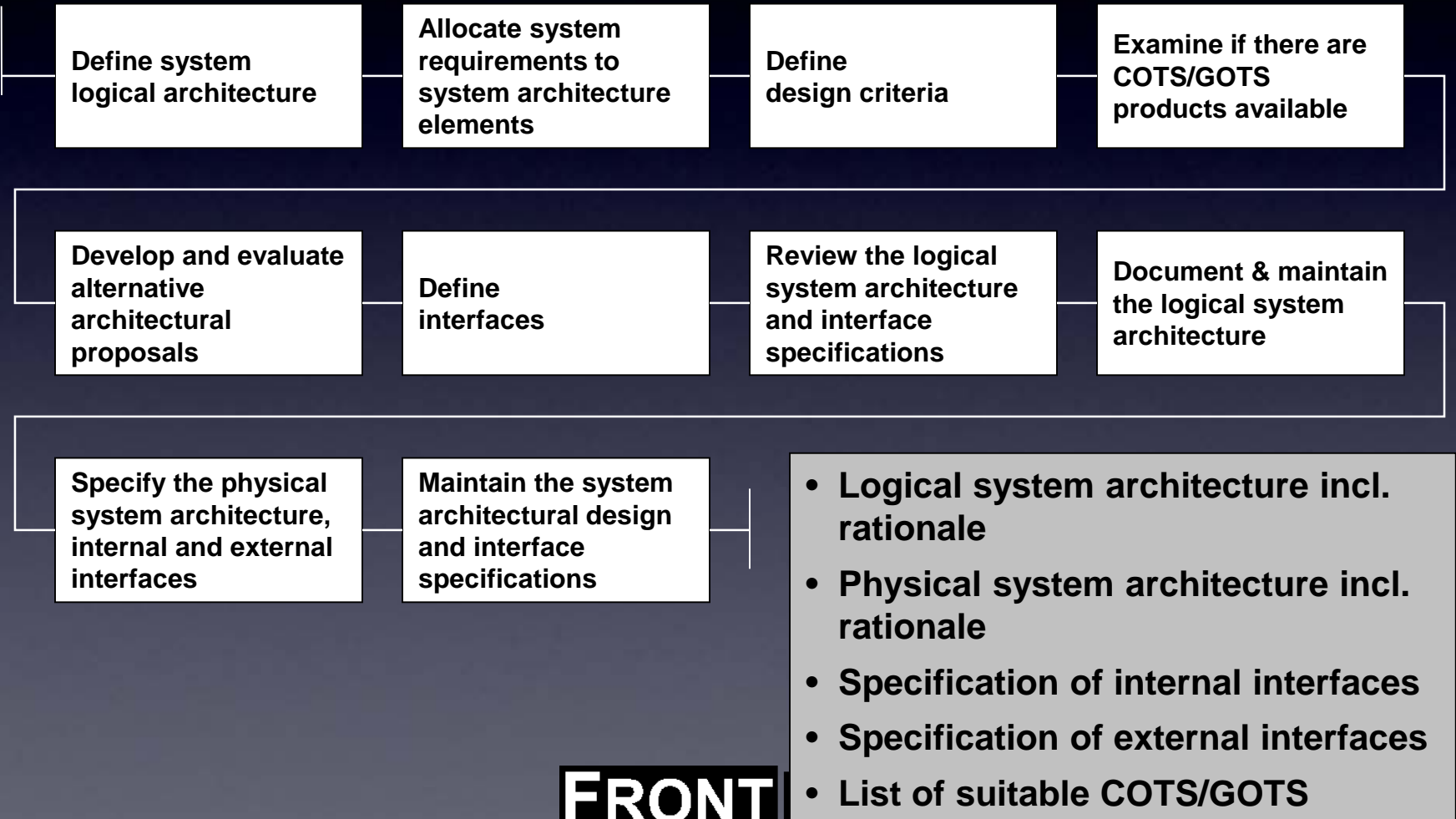
# Process: Requirements Analysis

- Stakeholder requirements
- Stakeholders



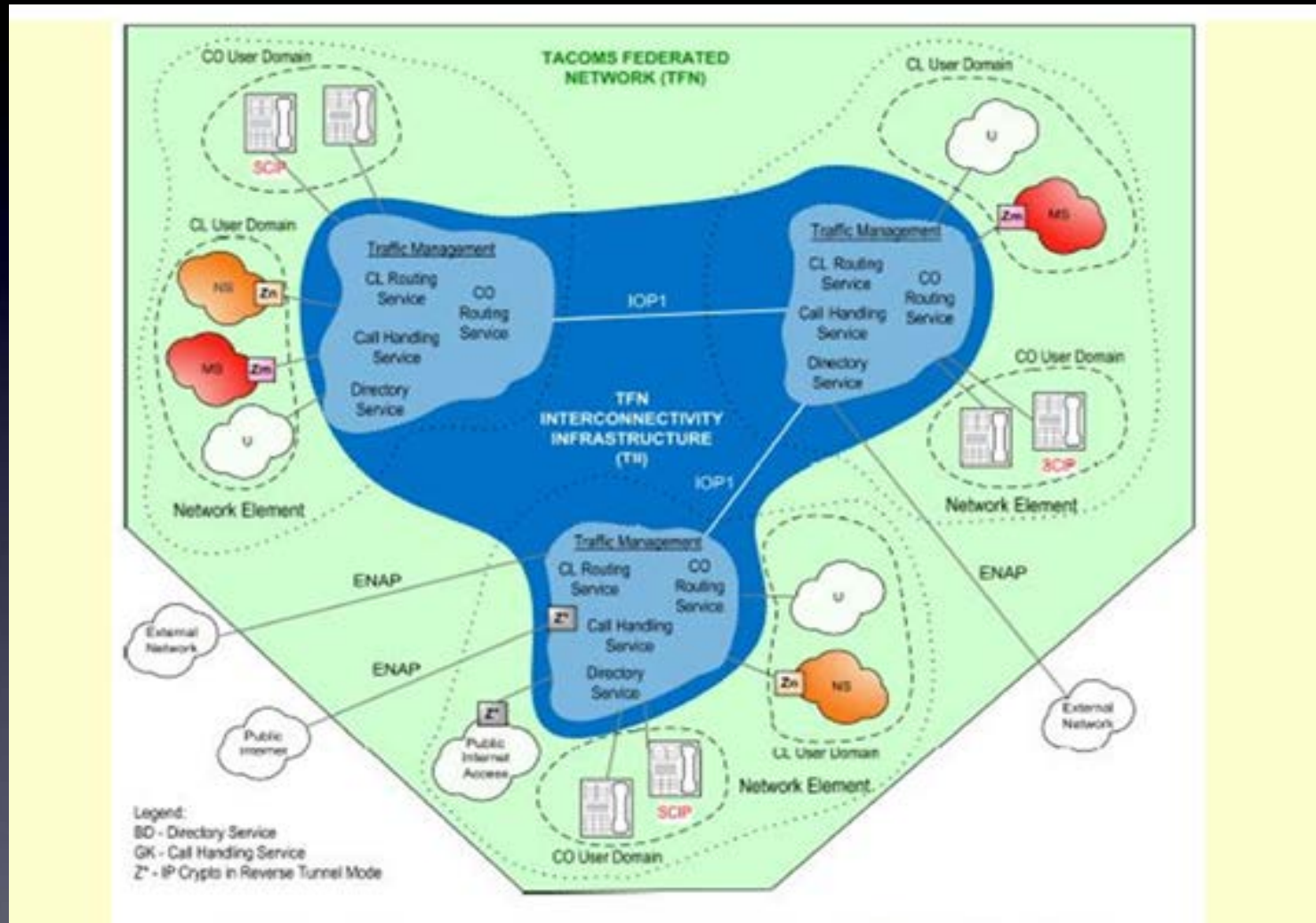
# Process: Architectural Design

- System requirements
- Overall agreements
- System domain specialists

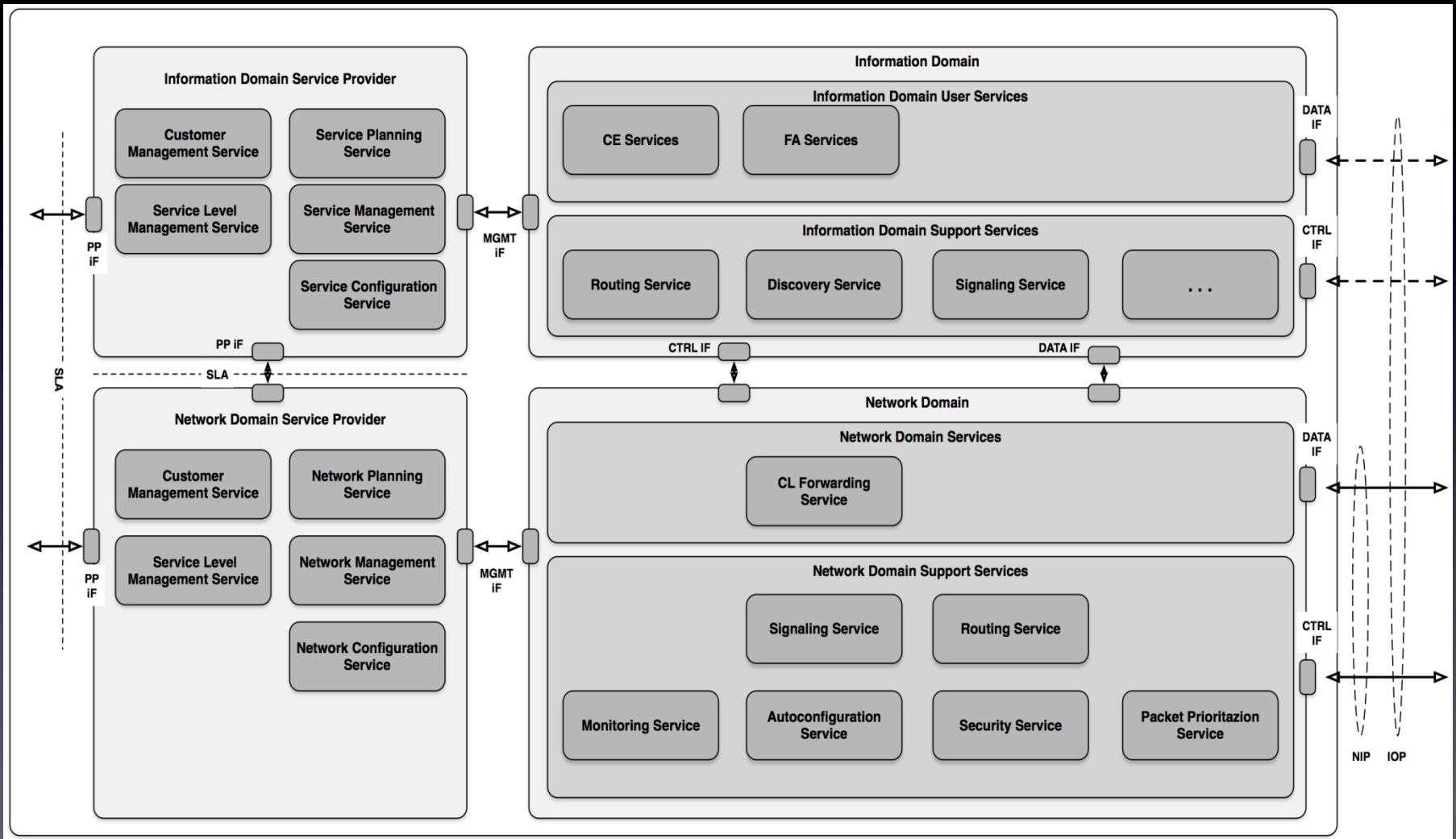


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# Example of high-level Technical Service Architecture of TACOMS



# Example of service architecture for technical communication within FMN

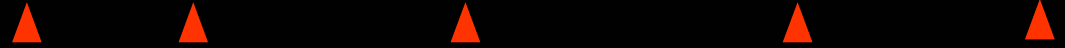


# Summary

# Some challenges in Systems Engineering

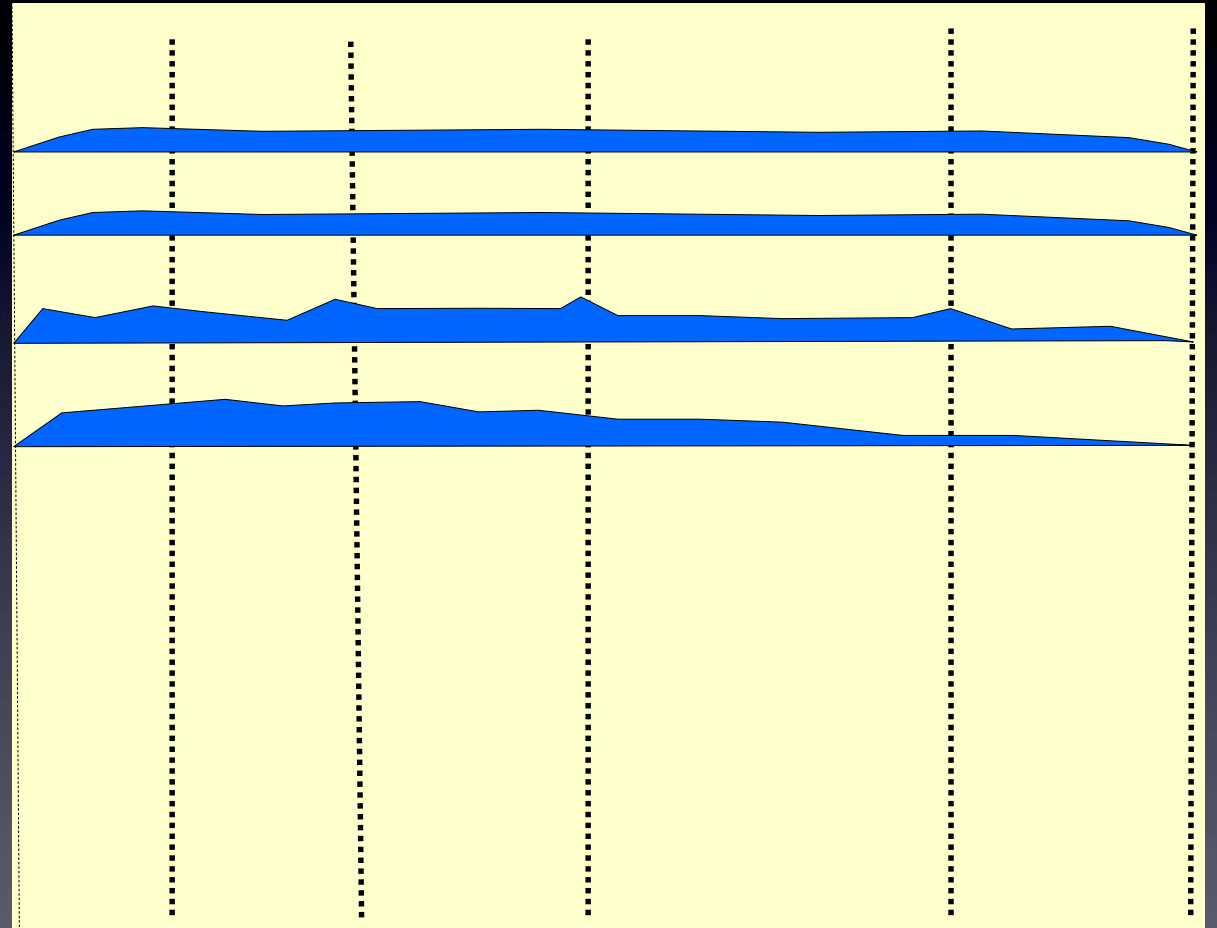
1. It's hard to identify the right stakeholder requirements
2. It's hard to hold the “system-of-interest” in focus
3. The need for a multi-disciplinary approach makes communication difficult
4. For every new system element in the architecture the complexity grows in a non-linear fashion
5. It's hard to get a balance between management and engineering

# Systems Engineering Processes and the System Life Cycle

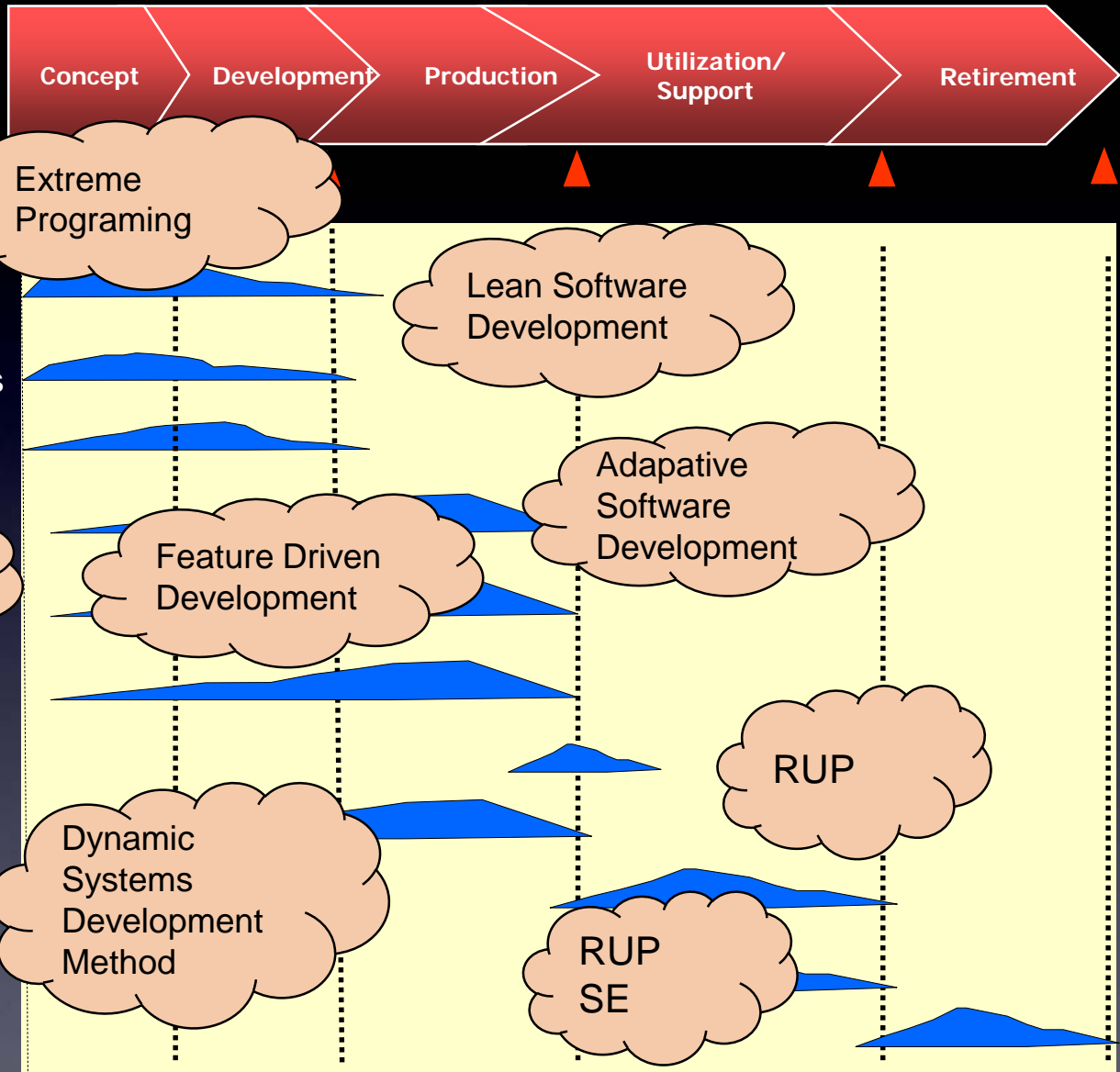


## Processes:

- Enterprise Processes
- Agreement Processes
- Project Processes
- Technical Processes



# Technical Processes and the System Life Cycle



## Technical Processes

- Stakeholder Requirements Definition Process
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